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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,266	06/19/2001	Yukihiro Matsumoto	41928	9419

1609 7590 07/20/2004

ROYLANCE, ABRAMS, BERDO & GOODMAN, L.L.P.
1300 19TH STREET, N.W.
SUITE 600
WASHINGTON,, DC 20036

EXAMINER

ZALUKAEVA, TATYANA

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/883,266	Applicant(s) MATSUMOTO ET AL.	
	Examiner Tatyana Zalukaeva	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/12/2003 has been entered.

Claim Objections

2. Claim 8 is objected to, because recited "...not less than 10 ppm" apparently should be not more than 10 ppm, as supported by the instant specification. Correction is required.
3. Claim 4 is objected to because of the following : it is not clear how the neutralization ratio can be more than 100%. Clarification is required.
4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-3, 5-9, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimaru et al (U.S. 6,444,744B1), in view of Sumiya (u.S. 5,380,808).

Fujimaru discloses a water absorbent resin and a method of making such resin. One of the possible options to produce a resin is polymerizing a monomer component containing a major proportion of acrylic acid and/or or salt which has a content of

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hydroquinone or benzoquinone **less than 0.20 ppm**. (abstract). According to Fujimaru the acrylic acid used in his process is one that industrially produced by a propylene gas phase oxidation process (col. 4, lines 7-11, col. 9, lines 19-40). In a finally purified acrylic acid the amount of hydroquinone is 0.5-1ppm (col. 9, lines 50-56). One of the advantages of Fujimaru is that the water absorbent rein is produced from acrylic acid having reduced hydroquinone content, of at most 0.2 ppm (paragraph bridging col. 5 and 6, col. 5, lines 12-17), a hydrophilic water absorbent rein is produced by aqueous solution polymerization (col. 6, lines 18-21); a water absorbent rein is at least partially neutralized (col. 6, lines 31-33); a resin of which the surface neighborhood of the particles are crosslinked is taught by Fujimaru in col. 6, lines 67-67. Fujimaru further teaches that examples of his resin include polyacrylic acids or neutralized polyacrylic acids, neutralized by 50-95 mol. % (col.11, lines 20-30). Neutralization may be carried **out before, during or after polymerization** (col. 3, lines 35-40). The alkaline substances used for neutralization include **Na, Li, K hydroxides** (col. 12, lines 10-15). It is preferable that 50-95% of acrylic acid is neutralized (see col. 11, lines 24-26). The polymerization temperature is preferably within the range of 20-90°C. (col. 13, lines 33-35). The water absorbent capacity of the resin according to Fujimaru is preferably **at least 30 g/g under a heavy load of 50 g/cm²** (col. 20, lines 25-30).

Therefore all the limitations of the instant claims 1, 3-9 are expressly met by Fujimaru.

With regard to the limitations of the instant claims 1 and 2, which are concerned with the amount of protoanemonin and furfural impurities in the starting acrylic acid, it will

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inherently be within the claimed range because the starting acrylic acid of Fujimaru is identical is obtained by the process identical to the instantly claimed, and is even purified in a way identical to that described in the instant specification on page 6, lines 12-16. Since the claimed compound is not novel, but is identical to that of the prior art, obtained by the method identical to that of the prior art and purified by the method identical to that of the prior art, it is not rendered patentable by recitation of properties, whether or not these properties are shown or suggested in prior art. In re Spada, 911 F 2d 705, 709 15 USPQ 1655, 1658 (Fed. Cir. 1990).

The disclosure of Fujimaru differs from the instant claims 1 and 8 by not specifically recognizing the presence of oxygen in a solution after neutralization in the amounts of 0.5-20 ppm. However, all the Examples of Fujimaru provide the purging of inert atmosphere (nitrogen gas), which intends to reduce and/or remove oxygen from the solution of acrylic acid.

Sumia, produces water absorbent resin based on neutralized acrylic acid (abstract), wherein Example 2 in col.14 provides for polymerization process, wherein 75% of acrylic acid was preliminary neutralized by sodium hydroxide , such that in a polymerization solution oxygen content was reduced to 1ppm by introducing nitrogen into the solution.

Based on the substantial similarity of the processes of Fujimara and Sumia, it would have been obvious to those skilled in the art that the same nitrogen atmosphere in Fujimaru will reduce the presence of oxygen to the same level as shown in Sumia, and to the same level as called in the instant claims.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimaru in view of Sumia, and further in view any one of the following: Maezawa et al (U.S. 3,725,208) or JP 9-316027 or GB 2,285,046, each one individually.

Fujimaru and Sumia disclose the use of a starting material, acrylic acid, that was obtained and purified by the methods analogous to those claimed by Applicants.

Fujimaru does not specifically disclosed that distillation takes place in the presence of hydrazine compound.

The use of hydrazine compounds in purification of acrylic acid in order to reduce the aldehyde impurities is routinely used in the art and has been known for a long time. A large number of publications employ such conventional method. Thus each of the above references provides a process for distillation of acrylic acid with a specific reagent-hydrazine, in order to reduce the aldehyde content (Maezawa –title, col. 1, line 29, col. 2, lines 12, 13, Examples 1- 9, claims 4, 5; JP'027-abstarct; GB'0469 abstract, page 3, lines 9-20, claim 1).

The motivation to utilize such compounds in the process of Fujimaru is derived from his disclosure that recognizes the presence of aldehyde impurities and the necessity of their removal and suggests that conventional and improved distillation processes can be used to remove such impurities. Therefore, a person skilled in the art, motivated by teaching of Fujimaru, would have found it obvious at the time the invention was made to utilize conventional reagent, namely hydrazine compound, in a distillation

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process of Fujimaru to reduce aldehyde impurities and thus to arrive at the instant claims.

Response to Arguments

7. Applicant's arguments filed January 13, 2003 have been fully considered but they are not persuasive. The crux of Applicants arguments is that the acrylic acid of Fujimaru, wherein the distillation is conventional does not reduce the protoanemonin content to within the claimed range, and that a general disclosure of distillation does not inherently produce acrylic acid having the claimed limits for the impurities.

In response to this, Applicants attention is drawn to their own specification, paragraph bridging pages 5 and 6, which states that if after production of acrylic acid it impurity amount satisfies the requirement of the instant process, the acrylic acid is used without further purification, farther down on page 6, Applicants describe ***conventional*** (emphasis added-T.Z.) distillation and/or crystallization process that may be further enhanced in order to reduce the amount of protoanemonin and furfural.

Fujimaru not only discloses the same distillation and crystallization methods of acrylic acid purification in col. 9, lines 19-40, but enhances such purification process by **exactly the same way**, as does instant specification

The phrase "the step . . . is carried out more carefully than conventional cases" in method (2) above means that the rectification degree is raised, for example, by **increasing the number of columns or the reflux ratio** (both in the case where the distillation method is employed as the purification method) **or the number of times of**

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the crystallization (in the case where the crystallization method is employed as the purification method). (Col. 10, lines 24-31). Applicants attention is further drawn to col.27, lines 29-31 that provides for content of a purified acrylic acid, wherein no protoanemonin is detected.

Therefore, Applicants' argument that purification process of a starting material in Fujimaru is different is erroneous, the purification process in Fujimaru is described with sufficient specificity and does inherently produce the same product with the same amount of impurities. It is axiomatic that one who performs the steps of a process must necessarily produce all of its advantages. Mere recitation of a newly discovered **property or function** that is inherently possessed by the things **or steps in the prior art does not** cause a claim drawn to those things to distinguish over the prior art. **Leinoff v. Louis Milona & Sons, Inc.** 220 USPQ 845 (CAFC 1984).

With regard to Applicants argument on claim 8, that Fujimaru is silent about the aldehyde content, as per instant claim 8, the same rationale as applied above to claim 1 is incorporated herein by reference in its entirety. Furthermore, Fujimaru teaches that "crude acrylic acid" is further purified to remove very small amount of polymerization-inhibitor aldehyde, thus obtaining purified acrylic acid" (col. 9, lines 34, 35). This virtually removes entirely aldehyde impurities.

Therefore, based on the above discussion, wherein the method of making and purification of a starting process of Fujimaru is identical to the process of making and purification, as instantly claimed, the inherency has been established. To establish inherency, the **extrinsic** evidence of the identical process and the identical product

made clear that the missing descriptive matter (amount of impurity) is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill., as per *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981).

With regard to Applicants' argument that Fujimaru does not recognize that the reduction of aldehyde content is performed by treating with alkali metal hydroxide, it is noted that the reference does disclose the treatment before polymerization, as discussed above. and further Applicants did not claim that the treatment with alkali metal is performed with the purpose to reduce the amount of aldehyde. Therefore, Applicants' arguments are more specific than the claim.

Other Applicants arguments are moot in view of new grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (571) 272-1115. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tatyana Zalukaeva
Primary Examiner
Art Unit 1713

July 14, 2004

A handwritten signature in black ink, appearing to read 'Tatyana', with a long, sweeping horizontal stroke extending to the right.